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ABSTRACT

An integrated set of summer workshops was conducted for elementary teachers in the River Rouge, Michigan, School District (for eight teachers and eight aides from each of grades 1, 2, and 3 representing all four elementary schools) to introduce them to and provide practice in selected innovative techniques for the management of classroom behavior and instructional materials. The three teacher workshops dealt with development and use of instructional objectives stated in performance terms, implementation of the concepts of learning modules and mastery tests, and application of contingency management techniques for controlling student behavior in the classroom. The program provided participants with first hand practice and experience. Numerous practical exercises were built into each schedule, and participants were asked to use instructional materials, course content, and specific behavior problems from their school-year environments and experiences. In the contingency management workshop, classroom practice was held with pupils, and teachers alternating as teachers and observers. Additional workshops were conducted for administrative and supervisory personnel to enable them to provide knowledgeable support to the teachers in implementing the new techniques during the school year. Workshops were considered successful. A follow-up program will assist the teachers in implementation and evaluate the effectiveness of the innovative techniques in the classroom. (Author/JS)

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Introducing Innovation in Instruction: In-Service Teacher Workshops in Classroom Management

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by

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HUMAN RESOURCES RESEARCH ORGANIZATION

Technical Report 70-104

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The Human Resources Research Organization (HumRRO) is a nonprofit corporation established in 1969 to conduct research in the field of training and education. It is a continuation of The George Washington University Human Resources Research Office. HumRRO's general purpose is to improve human performance, particularly in organizational settings, through behavioral and social science research, development, and consultation.

Views and conclusions expressed in this report are those of the Human Resources Research Organization, and should not be interpreted as representing the River Rouge School District.

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FOREWORD

This research effort was conducted by the Human Resources Research Organization to determine the feasibility of training elementary teachers in the application of selected aspects of instructional technology. Classroom management problems commonly experienced by elementary teachers were evaluated, and aspects of the technology that appeared most relevant to the problems were isolated and organized into a series of instructional workshops.

This report presents the preliminary results of a series of workshops conducted for the River Rouge, Michigan School District. The explicit purpose of these workshops was to provide members of the school staff with practice and experience in applying the special classroom management techniques.

To evaluate the effectiveness with which the techniques can be implemented in the classroom, a special follow-on program is under way during the academic year following the workshops. An important objective of this program is to increase the likelihood that teachers will attempt to implement the techniques learned in the workshops.

The training was conducted by HumRRO Division No. 5, Fort Bliss, Texas. Preparation for the series of workshops was begun in April, 1970, and the workshops were presented during June and July, 1970. Dr. William H. Melching served as the principal investigator. Other research personnel who participated in preparing or administering instruction included Dr. Paul G. Whitmore, Dr. Edward W. Frederickson, and Dr. Harry L. Ammerman. The Director of Division No. 5 during this period was Dr. Robert D. Baldwin; Dr. Albert L. Kubala is the current Director.

Special assistance in scheduling and arranging the workshops was provided by Mr. Frederic A. Rivkin, Director of Federal Projects for the River Rouge School District. Consultation and assistance in conducting one of the workshops were provided by Dr. David A. Sachs, Department of Psychology, New Mexico State University, Las Cruces, New Mexico.

The workshops and research were conducted under contract with the River Rouge, Michigan School District.

Meredith P. Crawford
President
Human Resources Research Organization

SUMMARY AND CONCLUSIONS

PURPOSE OF THE STUDY

With the ultimate objective of improving the achievement of elementary school pupils, a set of summer workshops was conducted for elementary teachers of the River Rouge, Michigan School District. The workshops were planned to introduce the teachers to, and give them practice in, special innovative techniques for the management of students' classroom behavior and instructional materials.

Many instructional innovations have been suggested as a result of educational research, but implementation has been limited because both teachers and their administrators have lacked the kind of information and skills needed to put the innovative techniques into effect in regular school operations. The HumRRO workshops therefore were primarily oriented toward instruction in how to apply selected techniques in the day-by-day work in the classroom, both in working with pupils and in organizing the presentation of instruction.

The specific problems to be addressed were considered to be:

(1) Identify potential changes in the instructional processes used in the elementary classrooms that would lead to increased student achievement.

(2) Translate the changes in the instructional processes into terms of changes desired in the classroom behaviors of the teachers.

(3) Develop and apply effective techniques for changing the classroom behavior of the teachers.

(4) Develop and apply techniques for sustaining the changes in the classroom behavior of the teachers.

METHOD

Classroom management problems commonly experienced by elementary teachers were evaluated, and aspects of educational technology that appeared most relevant to the problems were isolated and organized into an integrated set of instructional workshops on classroom management techniques. New curricular materials were not introduced; the objective was to modify teacher behaviors, using existing materials, in order to deal more effectively with the pupils.

The analysis of classroom problems suggested the following changes in instructional processes in order to improve student achievement and motivation:

(1) Introducing behavioral (i.e., performance) objectives as a basis for teaching and testing activities.

(2) Requiring all students to learn to master each part of the instructional program.

(3) Applying contingency management techniques, emphasizing reinforcement and reward, for controlling student behavior in the classroom.

To help school personnel learn to use innovative techniques toward these ends, three workshops were developed for teachers:

Development and Use of Instructional Objectives
Implementation of Concepts of Learning Modules and Mastery Tests
Employment of Contingency Management Techniques in the Classroom

In addition, a workshop was developed to inform administrative personnel about the teacher innovation programs, so that the administrators could supply constructive and

knowledgeable support. A fifth workshop was developed for supervisory personnel to provide intensive training on the most difficult of the techniques, contingency management, so that local school personnel would be in a position to help teachers implement the workshop techniques in their classes during the coming school year.

The workshops were designed to provide participants with first-hand practice and experience. Numerous practical exercises were built into each schedule, and participants were asked to use instructional materials, course content, and specific behavior problems from their school-year environments and experiences. In the contingency management workshop, classroom practice was held with pupils, and teachers alternating as teachers and observers.

The workshops were conducted in the early summer of 1970, with the administrative and supervisory sections preceding the teacher workshops. The set of three teacher workshops extended over a period of 19 days, with the contingency management workshop held in the morning and the workshops on objectives and on learning modules held in the afternoon of each day. All four elementary schools in the District were represented, with eight teachers and eight aides from each of grades one, two, and three.

Since the ultimate success of the workshops depends on the degree to which the classroom management techniques can be effectively implemented during the school year, complete evaluation is not yet possible. A follow-on program is under way during the school year, to assist teachers in implementing the workshop procedures, and to obtain evaluation data on various aspects of the implementation.

WORKSHOP EXPERIENCE

(1) In general, attitudes of administrators, teachers, and teacher aides appeared to be quite positive throughout the set of workshops.

(2) As a product of the activities in the instructional objectives and the learning modules workshops, the group of teachers prepared drafts of performance-type objectives for reading and mathematics for grades one, two, and three. While these products were not completely adequate, they were an acceptable beginning, and provided grounds on which a teacher could base instruction during the coming year.

(3) In the contingency management workshop, the teachers made considerable progress in learning to apply CM techniques of reward and reinforcement in their classroom behaviors with pupils. During the two-week period in which teacher observations were recorded, data were obtained on three teacher behaviors: increase in providing response opportunities to pupils, increase in "approving behaviors," and decrease in "disapproving behaviors." For all three, there was a significant change in the desired direction ($p<.001$) over the course of the observations.

(4) Initial reports of implementation during the follow-on program have tended to be favorable.

CONCLUSIONS

(1) The results indicate that, within the confines of the workshop, the teachers were able to implement the techniques introduced. That is, teachers did demonstrate a capability to write performance objectives, develop learning modules, and apply contingency management techniques in the classroom.

(2) The workshops resulted in modification in teacher classroom practices in classroom management.

(3) Teachers readily accept contingency management techniques for working with pupils in the classroom. This was evident by their enthusiasm throughout the workshop.

(4) The development of group products is evidence of the ability of teachers, within the workshop environment, to cooperate and coordinate their activities. For example, within the limited time available for the work, the teachers did produce a fairly useful set of behavioral objectives for grades one, two, and three.

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Introducing Innovation in Instruction: In-Service Teacher Workshops in Classroom Management

BACKGROUND AND APPROACH

PROBLEM

The dissatisfaction of the River Rouge School District with the general achievement of the children in the elementary grades was the basic problem that led to this research project. Corrective changes could be attempted either in the curricular materials or in the instructional processes used in the elementary grades. Since there was no reason to believe that materials significantly superior to those already being used were available on the educational market, school officials decided to attempt to improve achievement by undertaking changes in the instructional processes.

While educational authorities have written much about possible innovations for school systems, it is generally true that few significant changes in instructional practices have actually occurred. One important barrier to the adoption of innovative concepts is simply that administrators and teachers have not been adequately trained to bring about implementation. They have been "exposed" to new techniques, promising approaches, and novel solutions, through educational literature and through attendance at professional meetings, but merely reading or hearing about new practices has rarely resulted in substantial change in instructional behavior. To prevent failure on this basis, it is therefore important that the innovation effort itself include mechanisms for establishing desirable changes in the classroom behavior of the teachers.

Lacking explicit guidance, and not wishing to invite failure, teachers and administrators generally tend to respond to educational innovations by remaining somewhat aloof and distrustful. Furthermore, teachers have apparently perceived a lack of enthusiasm and support for innovation from administrators; in turn, administrators have interpreted lack of guidance from their boards of education as evidence of disinterest. When teachers do not have the necessary skills, and when they feel that higher echelons of management do not understand the need for innovation, it is not surprising that little change has occurred in the system or in the instructional personnel. To prevent failure on this basis, it is therefore important to prepare personnel for the innovation and to obtain the understanding and active support of the administrators in the school system. (1)

For the River Rouge project, the specific problems were viewed as being to:

(1) Identify potential changes in the instructional processes used in the elementary classrooms that would lead to increased student achievement.
(2) Translate the changes in the instructional processes into terms of changes desired in the classroom behaviors of the teachers.
(3) Develop and apply effective techniques for changing the classroom behavior of the teachers.
(4) Develop and apply techniques for sustaining the changes in the classroom behaviors of the teachers.

APPROACH

Application of the technology of training (2, 3, 4, 5, 6) constitutes the major experience of the HumRRO research staff. This technology is basically a behavioristic

approach to designing and implementing curricula. Although new curricular materials were not to be introduced in the River Rouge project, significant improvement in teacher and student behaviors was judged to be possible with existing materials. To try to obtain such improvement, the research staff concentrated on three requirements: that the teachers define the goals of their instruction in behavioral terms, that the teachers use effective techniques for modifying students' behavior toward these goals, and that every student exhibit the specified behaviors before progressing from one point of instruction to another.

One school of behavioral science, which is currently enjoying wide and useful application, contends that behavior is controlled by conditions in the immediate environment rather than by inner mental states. (7, 8) From this point of view, poor performance by students in the classroom would be attributed to conditions in that classroom, particularly those conditions which occur immediately following student behavior. Since the teacher constitutes the most significant aspect of the students' classroom environment, poor performance by students would be attributed, in large part, to the teacher's use of ineffective and inefficient techniques for managing the classroom and to inconsistent and poor techniques for motivating and controlling students.

Inadequate use of rewards and reinforcers, combined with inadequately stated instructional goals and inappropriately organized instructional materials, have all contributed to poor academic performance. Among other things, such practices have fostered in many students hostile and aversive reactions toward learning. Predictably, such students often are unable to accomplish their classroom work satisfactorily. They fall behind, becoming problems to their teachers and school system, and to society in general.

Assuming validity for both this analysis of classroom problems and this explanation of their origins, several changes in the instructional processes used in the classroom could be suggested:

(1) Introduction of behavioral objectives as a basis for teaching and testing activities.
(2) Application of contingency management techniques for controlling student behavior in the classroom.
(3) Requiring all students to learn to master each part of the instructional program.

It should be noted that all these proposed changes shared a common theme: improved student performance *through increased teacher capabilities.* Several aspects of instructional technology were therefore integrated into a convenient training package. It was believed that the implementation of this package would enable teachers to manage classrooms more efficiently, and thereby lead to more effective learning and classroom performance by students.

The next step in planning the project was to select the means by which changes in teacher capabilities could be brought about. Out of its experience in creating viable training programs, HumRRO has concluded that the instructional workshop is an efficient technique by which to bring about changes in the capabilities and attitudes of people. Through extended work-training sessions, workshop participants are able to acquire both the necessary skills and the confidence needed to initiate and pursue desired courses of action.

As a solution to the main research problem, HumRRO therefore proposed to conduct several workshops for personnel of the River Rouge School District. These workshops would seek to enable school personnel to employ more effective procedures in the management of classrooms and in the control of student motivation, thereby serving to improve the academic performance of students.

METHOD

ORGANIZATION OF WORKSHOPS

Three integrated workshops were developed as a single training package and presented to selected teacher and teacher aide personnel. A fourth workshop was developed for administrative personnel, and a fifth was designed expressly for school supervisory personnel who would be involved with follow-up implementation by the teachers.

The workshops for teachers and teacher aides focused on the following educational practices:

Development and Use of Instructional Objectives.
Implementation of Concepts of Learning Modules and Mastery Tests.
Employment of Contingency Management Techniques in the Classroom.

Workshops on these topics were designed to provide participants with first-hand practice and experience. Numerous practical exercises were built into each workshop, and participants were asked to use instructional materials, course content, and specific behavior problems from their own work environments and experiences.

The motivation and control techniques to be acquired by teachers from the several workshop experiences would, although seemingly unrelated, actually constitute a set of closely interrelated procedures. The goal was to enable each teacher to implement each of the techniques (instructional objectives, learning modules, and contingency management) in class in the coming school year.

The workshop for administrative personnel (superintendent, principals, and other staff members) was designed to provide factual information to administrators about what they might expect of their teachers as a result of the teacher-oriented workshops. This workshop sought to make administrators knowledgeable about the kinds of innovations teachers might attempt to adopt, and to help administrators provide support to teachers in their efforts.

In the fifth workshop, HumRRO provided intensive training in contingency management techniques to four selected supervisory personnel from the school system. The purpose of this training was to enable local school personnel to assist teachers in the use of the management techniques in the performance of their jobs during the regular school year.

RATIONALE AND CONTENT OF WORKSHOPS

A rationale for each workshop and the set of objectives generated for each are presented below.

Workshop on Instructional Objectives

The need for instruction in this area is based on the premise that, although teachers customarily attempt to express the goals of their instruction, they often do not state these goals in explicit and unambiguous terms. For example, they often phrase such goals in terms of the instructional content, or in terms of the behavior engaged in by the teacher. Seldom are the goals of instruction stated in terms of what the *student* must learn to do. Today the consensus among those engaged in research on learning is that better teaching and better learning result when goals are stated in terms of student performance.

Use of clearly formulated statements of *behavioral* goals of instruction is desirable on several grounds:

(1) Such statements communicate instructional content and instructional outcomes more accurately and explicitly than do other means of stating class goals. Thus, communication is facilitated between teacher and students, teacher and aides, or teacher and administrator.

(2) They foster preparation of relevant and necessary instructional experiences for students. When goals are clearly stated, it is easier to decide what instruction is relevant and what is irrelevant.

(3) They provide a sound basis for the organization and construction of tests. Without explicit objectives, meaningful and valid test items cannot be formulated.

(4) They tend to ensure consistency in achievement from teacher to teacher or from teacher to aide.

A set of goals stated in terms of expected teacher behavior was established for the workshop. These statements illustrate the kinds of skills the teachers were expected to acquire for expressing their instructional goals for their own students in performance terms. The workshop goals were:

> Given a set of learning goals, identify those that are stated in behavioral terms and those that are stated in non-behavioral terms.
>
> Given a set of learning goals, identify those in which conditions of performance are stated and those in which conditions of performance are omitted.
>
> Given a set of learning goals, identify those in which standards of performance are stated and those in which no standards are stated.
>
> Given a set of objectives in which the three structural components (action, conditions, and standards) are present, judge the precision (i.e., clarity, communicability, or explicitness) of each component. Judgments should be made as either "acceptable" or "unacceptable."
>
> Given an instructional topic or body of content conventionally taught in grades one, two, or three, write a set of behavioral objectives that will effectively communicate the instructor's intent with respect to student learning. As a minimum, each objective should contain (a) a statement of the desired student action, (b) the important conditions under which the action must occur, and (c) the minimum level of acceptable performance.
>
> Given a set of behavioral objectives appropriate for grades one, two, or three, prepare at least one criterion test item for each objective. To be acceptable, each test item must require behavior that is relevant to the behavior specified in the objective.

The nature of the instruction and the activities for this workshop are shown in Appendix A.

Workshop on Learning Modules and Mastery Tests.

Administrative requirements with regard to organizing and presenting instruction are frequently not compatible with the student's needs, expectations, and capabilities. Because teachers are confronted with the need to "cover" a stated amount of material in a given period of time, there is often a tendency to present instruction faster or in greater chunks than some students can effectively assimilate it. While the student is still struggling to accomplish one segment of material, and before he has demonstrated mastery of it, new material may be introduced and he may never have opportunity to acquire the missing knowledge and skills. The result is that the student gets farther and farther behind, and increasingly frustrated with "the system."

An approach to this problem that has enjoyed some success is one in which the total amount of material to be learned in a semester or in a year is divided into more manageable segments called units or "learning modules." Associated with each module is

an objective or set of objectives, and a corresponding criterion or mastery test. The task for the student in learning the material is to undertake it module by module, advancing to a new module only after he has satisfactorily accomplished the preceding one.

This procedure tends to foster more positive attitudes in the student toward the subject matter to be learned, partly because he now has greater control over the rate at which material must be learned. Some other benefits that accrue from the division of instructional content into learning modules are as follows:

(1) They provide a controllable instance in which desired student behavior—that is, learning—may be appropriately reinforced. Successful accomplishment of a module, in other words, sets up a situation in which the teacher may reward the student.
(2) The use of modules gives the student timely feedback about his progress in mastering the material to be learned. He knows how well and how fast he is progressing, and he knows what is yet to be accomplished.
(3) The use modules also tends to reduce the number of opportunities in which the student might experience failure. The student is not permitted to attempt new instructional material until he has demonstrated satisfactory performance in earlier material.
(4) Modules tend to reduce interference in learning by beginning training on one behavior only after the preceding ones have been fairly well established.

The goals for the teachers for this workshop were stated as follows:

> Given a body of instructional content or material in an area in which the teacher has a demonstrated teaching competence, divide the content into modules or learning units. The basis for the division of material should be natural or logical, and the amount of material may vary from unit to unit. Ideally, each week of instruction should contain approximately two modules of instructional material.
>
> Given a body of instructional material that has been divided into modules or units, convert the content of each module into statements of behavioral objectives. Each objective should be worded so that the three structural components (action, condition, and standard) are stated explicitly and each objective should be designated as either terminal or enabling, if possible.
>
> Given a list of objectives for a set of instructional modules, construct a set of test items (to be grouped into mastery tests) that will assess how effectively the student has achieved each objective in each module. To be acceptable, each test item must require behavior that is relevant to the behavior specified in the associated objective. Also, so that students may be retested if their initial performance on a mastery test is not satisfactory, alternate test items must be constructed for each objective.
>
> Using the objectives and modules previously prepared for a body of content, outline the necessary learning materials and set of learning experiences that are intended to enable students to demonstrate mastery of the content, i.e., to perform successfully on the mastery test.

The nature of the instruction and the activities for this workshop are shown in Appendix B.

Workshop on Contingency Management

The way the teacher interacts with and responds to the student—whether or not the teacher realizes it—plays a significant role in the attitude of the student toward learning and in his level of performance in the classroom. For example, the relative effectiveness of a classroom, the extent to which students engage in positive learning activities, the amount of disruptive behavior that occurs are all reflections of the extent of the teacher's classroom control.

Educational literature amply supports the contention that the teacher can modify and control the performance of the students, both academic and disciplinary, by controlling her own responses.[1] This finding holds across all sorts of teacher personalities, and for all sorts of student problems. With systematic training, any teacher can come to control her own behavior in ways that will improve the performance of the children being taught.

The approach by which to institute such classroom control—termed "contingency management"—has been found to be an effective means for controlling human behavior. Its premise, derived from operant conditioning research, is quite simple: The likelihood of a given behavior depends on its consequence. Behaviors that are followed by satisfying or rewarding events are more likely to recur than behaviors that are followed by unsatisfactory or nonrewarding events. If one knows, by observation, the kinds of stimuli that are rewarding or reinforcing to a student, then all one must do is arrange that a reinforcer is presented if the desired behavior by the student appears. For example, if candy is known to be a reinforcer for a student, then it can be used to increase the likelihood he will perform a certain way. The candy becomes a tool by which to control (reinforce) specific student behavior.

The nature of stimuli that can be reinforcing varies widely. Under certain circumstances, any of the following may serve as reinforcers: money, toys, food, free time, teacher attention, teacher praise, academic recognition, and so on.

It has become quite common to employ simple tokens (e.g., "points") as reinforcers. Because of the demonstrated effectiveness of tokens for maintaining and motivating academic behavior, many writers speak of a "token economy." To help control and motivate student performance, the teacher and the student may enter into a contingency contract. The teacher informs the student that a given reinforcer will be awarded when he displays appropriate behavior—correctly pronounces a given word, constructs a sentence, stays in his seat a fixed period of time, works an addition problem, or performs some other academic chore. For such behavior the student may accumulate tokens or points, exchanging them at a later time for a desired reward.

A good indication of the range of skills to be acquired by the teachers in the contingency management workshop is provided by the goals for this workshop, stated in terms of the expected teacher behaviors:

> When asked to do so, defend, justify, or rationalize contingency management procedures by giving at least three reasons for designing and using such procedures. The following reasons should be mentioned:
>
> Enables the teacher to modify or improve the behavior of a child in the classroom.
>
> Provides an effective means by which to manage the motivation of an individual student.
>
> Improves the chances of a student's success in any subject area.
>
> When asked to describe a previously observed child, describe the child in terms of observable behaviors rather than in terms of motivational, moral, or affective characteristics.
>
> When asked to explain the causation of specific behaviors emitted by a previously observed child, cite stimuli in the child's classroom environment as causative factors rather than motivations, moral, or affective characteristics.
>
> Define children's behaviors in such manner as to produce adequate reliability among several observers.
>
> Specify techniques for observing and recording children's behaviors which are appropriate to the nature of the behavioral modification which is to be made.

[1] See, for example, References 9, 10, 11, 12, 13, 14.

Cite specific instances of positive social reinforcers, high probability behaviors, aversive social stimuli, and social punishers common for school children in the classroom.

Cite strengths and weaknesses of each of the following behavior modification techniques:

Positive reinforcement of desired behaviors
Positive reinforcement of behavior incompatible to undesired behaviors
Ignoring of undesired behaviors
Punishment of undesired behaviors
Negative reinforcement of desired behavior
Token economies
Performance contracting

When presented with descriptions of specific undesirable classroom behaviors of either individual children or groups of children, prescribe an appropriate behavioral modification technique, identifying specific details in the situation appropriate to the application of the technique.

Recognize technical errors in the application of behavior modification techniques, including errors in timing and consistency of reinforcement contingencies, errors in the selection of reinforcers, errors in changing the reinforcement schedule, errors in effecting shifts from one reinforcer to another, and errors in assessing the success or failure of the application of a technique.

The nature of the instruction and the activities for this workshop are shown in Appendix C.

Workshop for Administrative Personnel

This workshop was prepared to help administrators help teachers. The essential first step was to supply the administrators with information about what teachers would be learning to do. Thus, the administrative workshop first reviewed the concepts that would be introduced in the teacher workshops, and then turned to the role of the administrator in implementing educational innovations.

The instructional objectives of the administrative workshop were stated as follows:

When necessary, defend or explain the several innovative instructional practices in which teachers and teacher aides in the River Rouge School District have currently been instructed. As a minimum, the workshop participants should be able to offer a general explanation of the following practices:

Development and use of instructional objectives in the classroom.
Development and use of learning modules and mastery tests in instruction.
Use of contingency management techniques in improving classroom learning and performance.

When informed of changes in instructional practices that a teacher is currently employing, evaluate the possible merit of the changes. The evaluation should be made in terms of the consistency of the changes with known goals of the several workshops.

Demonstrate a willingness, by publicly saying so, to permit a teacher to employ novel forms of rewards for the students in her class.

Encourage teachers in their efforts to implement innovative practices in classrooms (e.g., development of learning modules, construction of mastery tests, generation of instructional objectives, provision for student pacing, and employment of contingency reinforcement techniques) by declaring, in letters, memoranda, directives, staff meetings, etc., approval of these efforts.

The nature of the instruction and the activities for this workshop are shown in Appendix D.

Workshop for Supervisory Personnel

In substance, the purpose of this workshop was to provide the District with in-house supervisory expertise on the most technical aspect (contingency management) of the several training techniques that would be introduced in the teacher workshops. The goals of this workshop were essentially the same as those established for the teacher-oriented workshop in contingency management, so no separate list of goals was prepared for the supervisor workshop.

PRESENTATION OF INSTRUCTION

Each workshop participant, including each teacher aide, received a copy of a special workbook prepared by HumRRO. This workbook stated the objectives for each workshop, presented a schedule of activities, and gave definitions of workshop terms. It also contained four sample "programs" in contingency management, providing detailed instructions to the teacher; using them as guides, each teacher could prepare procedures for modifying designated student behavior.

The workshops were conducted during the summer, 1970. Table 1 lists the location for each workshop, the number and types of participants attending, and the total number of days and hours per day involved.

The workshop for supervisory personnel was held approximately three weeks before the other workshops. The four representatives designated by the School District to receive this training—three elementary school principals and the director of federal projects for the District—spent 3½ days at HumRRO Division No. 5, Fort Bliss, Texas, where the training was accomplished. The workshop participants read and studied selected literature in the field of contingency management, attended daily discussion sessions conducted by the HumRRO staff, devised sample contingency programs appropriate for modifying or controlling specific student behaviors, and attended a special lecture by an expert in contingency management techniques.

The two-day workshop for administrative personnel was presented prior to the teacher workshops to provide administrators with advance information about the training program plans. This scheduling provided enough time to undertake any important changes in format, procedure, or perspective that might be deemed necessary by the administrators. The participants were the River Rouge School District superintendent, his assistant, four elementary school principals, the high school principal, the curriculum coordinator, the director of federal projects, the school psychologist, and a representative from the nearby Down River Learning Disabilities Center. Most persons were in attendance both days.

The set of teacher-oriented workshops extended over a period of 19 days. The contingency management workshop was held each morning, and the workshops for objectives or learning modules were held each afternoon. The teachers and aides attending these workshops represented all four of the elementary schools of the District. There were eight teachers and eight aides from each of grades one, two, and three.

The contingency management workshop, which required classroom practice, was scheduled in conjunction with instruction of selected students from the District. Approximately 150 students from grades one, two, and three received instruction in reading and mathematics for two hours each morning for four weeks. These students were divided into 12 classes of 10-15 students each, with two teacher/teacher aide teams assigned to each class. So that the workshop would not be unduly biased by the kinds of students

Table 1

Workshop Schedule

Workshop	Place	Participants		Number of Days	Hour/ Day	Beginning Date
		Number	Kind			
Supervisory	HumRRO Div. No. 5	4	Principals & Project Director	3½	6	25 May
Administrative	RRHS Conference Room	11	District Administrators	2	6	17 June
Instructional Objectives	RRHS Library	24	Teachers[a]	9	3	22 June
Contingency Management	RR Elementary School Classrooms	24 24	Teachers & Aides	19	3	22 June
Learning Modules	RRHS Library	24	Teachers	10	3	6 July

[a]Teacher aides (24) also attended the first four training sessions.

attending summer school, participating schools were asked to send "representative" students. Thus, based on previous evaluations provided by the teacher, the students in attendance consisted of fast learners, slow learners, average children, and problem children.

The contingency management workshop was held in the gymnasium and in several classrooms of the Dunn Elementary School. The afternoon workshop sessions on instructional objectives or learning modules were held in the library of the high school building. Teacher aides were required to be present during morning sessions on contingency management to assist teachers and to observe teachers and students, but they were not required in the afternoon sessions beyond the first four afternoons. The aides continued to receive instruction during the remaining afternoon sessions, but this instruction was provided by administrative personnel from the School District and was not necessarily related to objectives or to learning modules.

DISCUSSION AND EVALUATION

The primary purpose of this series of workshops was to provide members of the school staff with sufficient practice and experience in classroom management techniques to enable them to implement the procedures in their classrooms in the coming year. A complete evaluation of the success of the effort must, therefore, be delayed until the end of the 1970-71 school year. Plans for the follow-up program are presented later in this section.

Pending this more complete evaluation, certain comments can be made about the effectiveness of the various workshop activities, and the results that were achieved. These comments are based on observations by the workshop staff, and informal evaluations by various administrators within the school and by teachers and teacher aides who participated. In general, attitudes of administrators, teachers, and teacher aides appeared to be quite positive throughout the set of workshops.

A brief description of the experience in each workshop is given in the following pages. It should be noted that, since the workshops are an integrated set, schedules were modified as needed to reflect progress made or additional time needed for specific activities. In particular, some of the developments of the instructional objectives workshop continued into and merged with the subsequent learning module workshop, and the products reflect the instructional experience and group coordination in both activities.

INSTRUCTIONAL OBJECTIVES

Once the teachers had had preliminary practice in evaluating simple statements of instructional goals, they undertook the task of writing objectives, first for the instruction they were presenting to the summer school students in the contingency management workshop, and then for the instruction they expected to present in their own classes in the coming year. (Figure 1)

Early in their efforts to prepare objectives, many teachers tended to write statements in terms of the mechanics involved in teaching rather than in terms of the capability (behavior) that the student must acquire. For example, an objective for a student might be this: "Given a group of words on the blackboard, the student must be able to pronounce each word and use it in a sentence." The teachers, however, tended to write an objective about this behavior in this fashion: "Given a set of words in the boxes on page 21 of the XYZ reader, the student must put an 'x' under the two boxes that contain the same word." In other words, they tended to think more in terms of their

Workshop Presentation and Practice Sessions

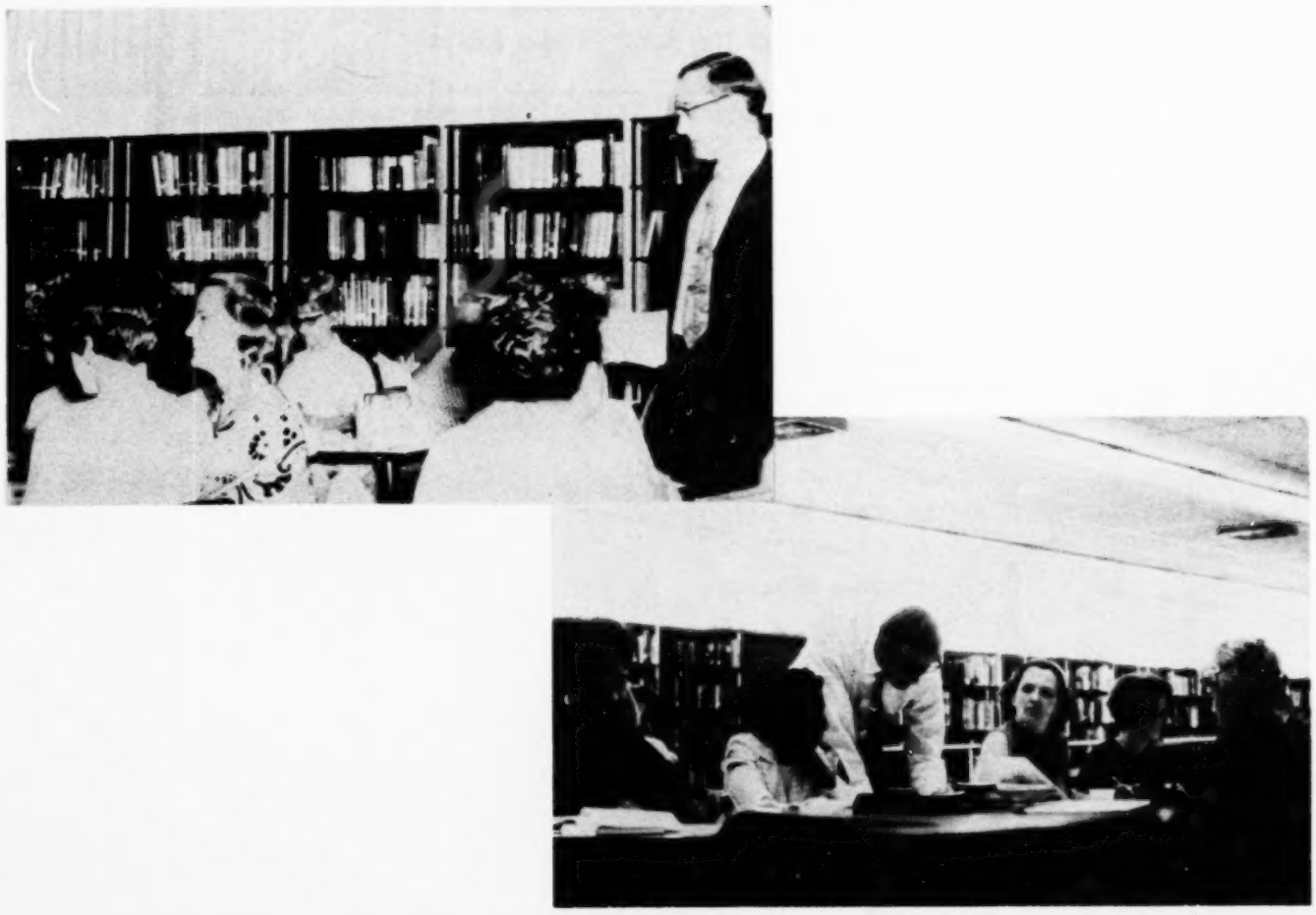

Figure 1

minute-by-minute instructional activities than of the behaviors the students were to acquire by the end of instruction.

During this workshop, there was some confusion with regard to differentiating "terminal" and "enabling" objectives. Teachers had been instructed to view desired end-of-course behaviors as "terminal" objectives, with supporting behaviors as possible sources of "enabling" objectives. Later, when the concept of learning modules was introduced, these terms were refined. It was suggested that the behavior to be produced by each module constituted a terminal objective, and that the subordinate parts or elements of the module constituted enabling objectives. Thus, each module should have one terminal objective, plus a set of enabling objectives. Although this is only one of several ways of relating modules to objectives, it did facilitate the production of objectives by this group of teachers.

The activities begun in the instructional objectives workshop and continued into the learning modules workshop resulted in the group of teachers establishing a common set of objectives for each of the grades across all schools. A first draft of terminal and/or enabling objectives was prepared for reading and for mathematics for grades one, two, and three. In addition, statements were drafted for desired entry level performances for grade two. Each teacher received a copy of all materials for her use during the coming school year.

A rough indication of the efforts of the group to generate behavioral objectives is given in Table 2.

Table 2

Number of Terminal Objectives Drafted for Each Grade Level

Grade Level and Subject Area	Number of Terminal Objectives
Kindergarten	
Reading and mathematics combined	22
Grade 1	
Reading	
Word Study Skills	42
Comprehension[a]	7
Mathematics	30
Grade 2	
Reading	
Desired entrance behaviors	11
Word Study Skills	18
Comprehension[a]	7
Mathematics	
Desired entrance behaviors	14
End-of-grade behaviors	14
Grade 3	
Reading	
Word Study Skills	23
Comprehension[a]	7
Mathematics	15

[a] Teachers accepted a common set of modules and terminal objectives for reading comprehension.

LEARNING MODULES

The attempt by the teachers to generate learning modules for content areas met with much difficulty, especially in the case of reading. In fact, there were times when both teachers and workshop staff were on the verge of concluding that the concept of "learning module" could not be applied to reading.

This situation shifted dramatically, however, when, by consensus, the teachers decided to view reading as composed of two broad categories: word study skills and comprehension. Once this distinction was accepted, the teachers proceeded to divide each category into a set of modules. Working in grade-level groups, the teachers attempted to construct modules that would be meaningful for a given grade across all schools. Some teachers objected to this approach, maintaining that the goals were slightly different from one school to another; other teachers did not agree. Eventually, the entire group turned to the problem of establishing a common curriculum for each of the grades across all schools.

The teachers agreed upon a common set of reading comprehension objectives for all grades. The general behavioral components of comprehension are identical for all grades, but the reading material which provides the context for the evaluation of comprehension is presumed to be of a difficulty appropriate to each grade. Consequently, comprehension modules are defined in part by the behavioral components of comprehension and in part by the difficulty of the reading material. Modules for the word study skills were developed separately for each grade.

The teachers participated in this effort for approximately ten days. While the approach was at times wearing for teachers and the HumRRO staff, it was generally viewed by both as a very worthwhile undertaking. Although the teachers did not succeed in developing a complete set of modules for all grades during the workshop time available, they did come to recognize the importance of the following instructional practices related to the concept of mastery modules:

(1) Each student must attain each objective. Attainment of 70% of an objective, or attainment of 70% of the total number of objectives, or attainment of an objective by 70% of the class is not acceptable. All objectives must be fully attained by all students.

(2) Individual student progression should be based upon individual attainment of objectives. The student must not be overwhelmed by a series of failures. He must attain earlier objectives before progressing to subsequent objectives.

Although the products resulting from these two workshops cannot be said to be comprehensive and completely adequate, it is believed that they are an acceptable beginning. Certainly they provide grounds on which a teacher may base instruction, and they also demonstrate the ability of a group of teachers to work together to generate such materials and standards.

Sample statements of objectives produced by the teachers are presented in Appendix E.

CONTINGENCY MANAGEMENT (CM)

Although it was planned to limit contingency management instruction to morning sessions and the instructional objectives and learning modules to the afternoon sessions, this schedule was modified in several instances because, after lunch, teachers often wished to discuss some of the activities and problems that had arisen during the morning instruction (Figure 2).

A formal presentation of the basic concepts and principles of contingency management was made to the participants at the beginning of the CM workshop. At that time teachers raised various questions about specific behavior problems and ways of handling these problems. The HumRRO staff members gave brief answers to these questions and provided additional instruction, which included assigning the participants to read the CM programs in their workbooks.

At the beginning of the second day of the CM workshop, instruction was provided on the techniques that would be used for observing both teacher and children. There was a brief discussion of the general principles and techniques of both CM procedures and recording procedures. The children who were to attend the two-hour instructional sessions during the workshop period arrived the morning of the second day and were divided into 12 classes according to grade level. Initial observation of teachers and of children began immediately. It was noted that the teachers quickly and effectively engaged the children in instructional activities.

On the third day of the program, behavioral definitions and observation procedures were again discussed in detail. Since two teacher/teacher aide teams were assigned to each of the 12 classrooms, one teacher taught one hour of reading, and the second teacher provided an hour of instruction in arithmetic. While one teacher was engaged in instructional activities, the second teacher and teacher aide observed and recorded teacher and child behavior.

There was some initial resistance by teachers to being observed by other teachers while they were providing instruction in the classroom. This problem soon disappeared as the teachers became more comfortable providing instruction with observers present.[2] During the classroom period of the third day, behavioral observations and recordings were made for the first time. It soon became evident that the teachers differed in their definitions of inappropriate and disruptive behaviors of the children. These differences were discussed after the instructional period, and general agreement was reached on defining many of the inappropriate behaviors.

It had also become evident that observing both the teacher's behavior and the children's behavior was too much for the observer teams to accomplish at one time. It was decided that the observers would concentrate on teacher behavior since the intent of the workshop was to change the behavior of the teachers rather than the behavior of the children.

During the two-hour instructional periods when children were present in the classroom, the workshop staff visited the classrooms and observed teacher behavior in order to make a diagnosis and prescription for each teacher concerning the use of CM procedures and techniques. It became evident that the majority of the teachers needed to increase the number of opportunities they gave the children to respond, and to increase the number of their own approving behaviors. In order to accomplish this, teachers were asked to use small candies as reinforcers and to dispense a minimum of 50 candies per hour. The teachers were to reinforce only academic behaviors at this time, and were not to use candies to control disciplinary problems. The level of 50 candies was selected because it represented a middle figure for approving behaviors as determined from the early observation record sheets.

In going from room to room, the workshop staff observed that the teachers were making a variety of technical errors in dispensing the candies. For instance, some teachers were having their teacher aides hand out the candies; this tended to delay the reinforcement, and the teacher was not acquiring the proper identity as the source of rewards and, as a consequence, was not acquiring capacity to reward the children by praise or gestures. Also, some teachers were not providing social or verbal reinforcement in conjunction with the candies (this tended to be a problem for some teachers for a considerable period). It was also noted that some teachers dispensed several candies at one time, thus reducing the reinforcing value of each candy. At least one teacher had added an element of punishment contingency in that she took candies away from a child who misbehaved. These technical flaws were pointed out and explained to the teachers.

It was also pointed out that many teachers would have to change their teaching style slightly in order to dispense 50 candies per hour. Many would have to create more opportunities for the children to give academic responses, while others would have to gauge their questions to the level of the individual child since they could not reinforce the child unless he answered correctly. It was also suggested that teachers might try

[2] In fact, near the end of the workshop sessions, many teachers moved from classroom to classroom so that they could observe each other in action. Some teachers said they found these visits extremely informative and wished that they had opportunities to engage in such visits during the regular school year.

drawing the children in close around them during the period of time in which they were providing response opportunities. In this way, they could dispense the candies immediately and unobtrusively.

After the initial observation periods, it was decided that the teachers should continue the candy program for the rest of the workshop. The reinforcing of academic responses was continued because the incidence of disruptive behavior was quite low (this could have been due to the presence of four adults in each classroom) and it thus was not appropriate to establish a general contingency management program in any classroom to control disruptive behavior.

By the beginning of the third week, it was quite evident that many of the teachers had incorporated the CM procedures into their various teaching approaches. The term "various teaching approaches" is used because almost all teachers observed presented the academic materials in vastly different manners. These approaches ranged from the extremely quiet classroom atmosphere of a few teachers to other classrooms where there was generally a high level of activity and noise. It was evident that teachers had different views of what constituted disruptive or inappropriate classroom behavior.

It was also evident that some of the teachers still were not providing enough social reinforcement or verbal praise when they dispensed candies. Other teachers still did not provide enough response opportunities for all the students in the classroom. Some teachers, for example, tended to call upon only those children who volunteered to answer questions.

Almost all teachers and teacher aides were having some difficulty ignoring inappropriate behaviors. It developed that basic concepts involved in the procedure had been misunderstood in some cases. During discussion, it was pointed out that ignoring inappropriate behavior could only be effective if the appropriate behavior was reinforced. Teachers and aides both had been ignoring, or at least trying to ignore, inappropriate or disruptive behavior without reinforcing the appropriate behavior, and as a result, they were not having much success in eliminating the disruptive behavior.

During the third week, the behavior of the teachers had begun to change enough so that the workshop staff could provide reinforcement to them as a group and, in some cases, individually. By the end of the third week, the teachers began to ask more questions and bring up specific problems that they noted in the classroom. These questions and problems were discussed with the group and, in many cases, teachers suggested solutions to problems brought up by other teachers.

Also by the end of the third week, the teachers' behavior had changed enough that it was decided observation of teacher behavior was no longer necessary. Instead, the attention of the observers was turned to the behavior of the children. The workshop staff assumed that by this time the teachers would be able to define inappropriate behaviors for themselves; the staff did not want to impose upon all teachers the same definition of inappropriate or disruptive behavior. However, this assumption was erroneous in that the teachers had difficulty describing inappropriate behavior in terms of observable behaviors. This problem was evident at the beginning of the fourth week when the teachers were asked to write behavioral statements of inappropriate or disruptive behaviors for their classroom.

After further discussion, most of the teachers began to write their statements in terms of observable behaviors. Some, however, continued to write "the child was too active," or "the child was disruptive." The point was finally communicated that they must be able to state desired or appropriate behaviors in terms of observable behaviors, in order to communicate their definition of inappropriate behaviors to other teachers and to their teacher aides.

The last week of the program was spent practicing the correct procedures in using the CM techniques. In fact, many of the teachers had begun to set up special programs

for targeted children. These procedures varied from ignoring the student for a period of time in reaction to inappropriate behavior, to setting up a form of contracting. Teachers had also begun to change the kind of reinforcers that they used. Many of the teachers used small colored marshmallows; others used candy suckers given out at the end of the day if the children had behaved appropriately. And in one room the teachers had set up a little store with several small inexpensive toys in it; the students earned tokens during the classroom instruction and, at the end of the day, bought items at the store.

It was generally agreed by the workshop staff and the teachers that the first hour of the CM program each morning was not used as effectively as it might have been. The plan had been to provide assistance to the teachers in contingency management techniques immediately before the classes began. However, the teachers felt the need to use the time to prepare for the instruction that they were to give their students that morning.

A general conclusion concerning the instruction on basic principles and concepts of CM was that more workshop time should have been devoted to completing practical exercises. Since the teachers had some difficulty throughout the program describing students in terms of observable behavior, more time should be devoted to writing descriptions in behavioral terms. In addition, workshop time should be provided where the teachers can work together in developing a CM program for representative disruptive behaviors. This practice and experience in writing the CM programs would benefit the teachers when they develop their own programs for their classes.

During the two-week period when teacher observations were recorded, data were obtained for three teacher behaviors: response opportunities, approving behaviors, and disapproving behaviors. The mean frequencies for each category are presented in Table 3 and graphed in Figure 3. A 20-minute observation period was scheduled during each hour of instruction, but due to the types of lessons presented at various times, data collection was not possible for parts or all of some sessions. For example, some teachers required seat work during part or all of their hour of instruction, so teacher-student interaction was not possible at that time.

Thirteen of the 22 teachers for whom data are reported increased their rate of providing response opportunities by at least 50%. The remaining nine teachers initially used a high rate of teacher-student interaction, which they maintained during the observation period. Thirteen teachers had an increasing rate of providing approving behaviors. One teacher had a slight decrease in her rate of approving behaviors, but this was accompanied by a marked decrease in disapproving behaviors. The remaining teachers maintained a relatively high level of approving behaviors.

The changes in disapproving were quite noticeable in many teachers who routinely used punishment. A total of 15 teachers showed a decrease in their rates of disapproving behaviors. Two teachers had increases in disapproving behaviors; however, they also showed an increase in approving behavior.

In order to statistically evaluate the changes in teacher behaviors, analysis of variance procedures were used. Because missing data decreased the efficiency of the statistical procedures, a reduced amount of data was subjected to statistical evaluation. The analyses for all three behaviors are summarized in Table 4. For all three behaviors, there was a significant ($p<.001$) change in behavior, in the desired directions, over the course of the observations.

It can be concluded from the evaluation of the observation data that the behavior of the teachers as a group changed significantly. They learned to present more response opportunities to the students. They learned to use more positive reinforcing statements and gestures, along with fewer aversive or punishing behaviors.

Table 3

Frequency of Teacher Behaviors
(Means for 20-minute periods)

Measure	1	2	3	4	5	6	7	8	9	10
Response opportunities										
Mean	35.7	36.8	39.9	48.2	48.4	71.5	56.4	61.0	56.7	51.3
Standard deviation	15.7	15.9	24.3	23.6	23.0	29.3	22.6	23.9	19.6	15.0
Number	13	18	20	21	22	22	22	21	21	22
Approving behaviors										
Mean	35.4	33.6	35.0	36.7	45.2	47.8	41.2	48.3	42.7	42.6
Standard deviation	23.2	24.3	28.8	31.7	23.2	17.8	13.7	30.3	28.6	25.3
Number	14	18	20	21	22	22	22	21	21	22
Disapproving behaviors										
Mean	5.2	7.2	6.9	7.9	4.8	4.4	4.1	2.7	4.2	2.6
Standard deviation	5.1	7.6	7.4	8.2	3.9	4.8	5.3	3.6	6.9	3.1
Number	13	14	15	15	17	17	17	16	17	17

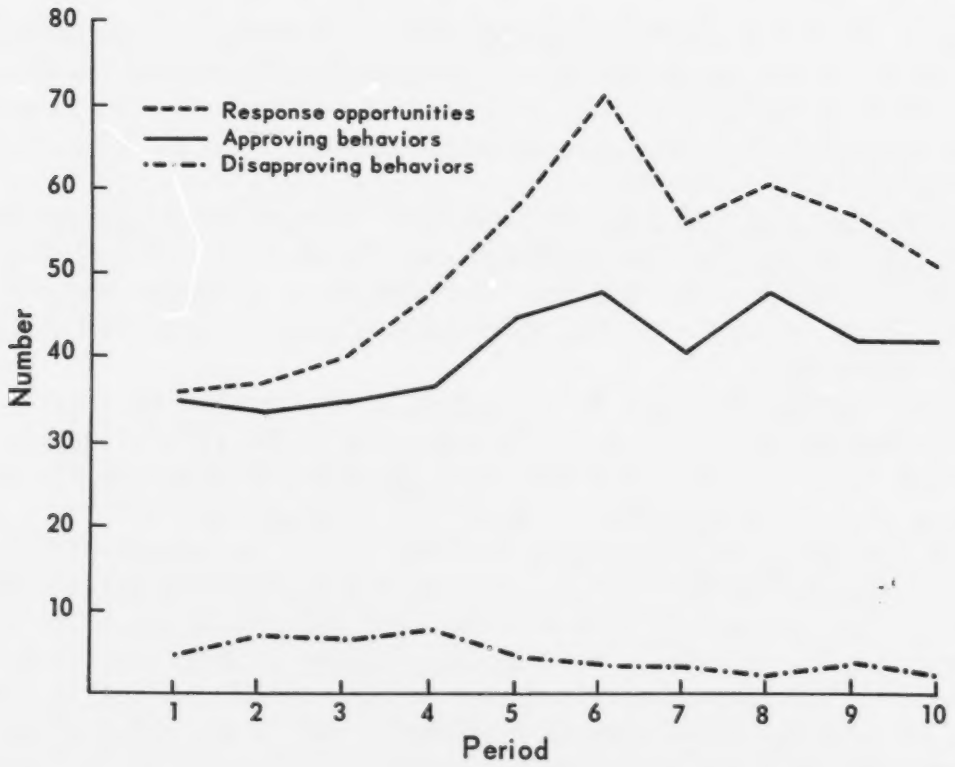

Figure 3

Table 4

Analysis of Variance Summaries

Source of Variance	df	MS	F
Response Opportunities			
Sessions (A)	7	2424	8.1
Teachers (S)	21	1980	6.6
A x S	147	297	
Total	175		
Approving Behaviors			
Sessions (A)	7	1247	4.6
Teachers (S)	21	2895	10.6
A x S	147		
Total	175		
Disapproving Behaviors			
Sessions (A)	7	72	4.0
Teachers (S)	16	134	7.4
A x S	112	18	
Total	135		

FOLLOW-ON PROGRAM

The intent of the summer workshops was to provide the participants with an introduction to and some initial practice in using special techniques for the management of classroom behavior and instructional materials. A special follow-on program has been planned as an integral part of the implementation of these techniques by the participating teachers during the 1970-71 school year.

A prime goal of the follow-on program is to increase the likelihood that attempts will be made by the teachers to implement the techniques and procedures that they learned in the workshops. In addition, the follow-on program will provide for an evaluation of the effectiveness of the procedures and techniques that are to be implemented in the classroom.

The follow-on program began with a period of observation by teachers of students in their classrooms, for several weeks at the beginning of the 1970-71 school year. At the end of the observation period, a workshop staff member contacted teachers who attended the workshops and assisted them in plans for designing and implementing the CM programs that they have determined are needed. Individual attention will be provided each teacher in planning her first CM programs to insure adequacy and completeness.

To ensure that the general CM concepts and techniques are being maintained, a program coordinator[3] is observing participating teachers in their classroom at scheduled intervals. Approving and disapproving teacher behaviors will be counted and recorded.

A series of meetings of all program participants will be scheduled in order to discuss general and specific problems, to report on successes or failures of CM programs, and to provide reinforcement and support for teacher and teacher aide behaviors.

Plans have been formulated for gathering types of data appropriate for the final evaluation of the program. Some of the kinds of information being sought:

(1) Achievement data. It is planned to administer standardized achievement tests at the end of the year to all students who have been taught by teachers who attended the summer workshops. The performance of these students will be compared with other students whose teachers did not attend the workshops.

(2) Attendance. The attendance record of "experimental" students for the year will be compared with other students of similar grades. Also, the record of the previous year's attendance by "experimental" students may be compared with that of the present year if this information is available.

(3) Discipline problems reported to principal. The principal of each elementary school is being asked to maintain careful records of discipline problems, and attempts will be made to compare the number and types of problems presented by the various teachers.

(4) Referrals to learning disability center. Records will be maintained of the number of referrals made by teachers to the learning disability center. Of interest is whether participating teachers will increase or decrease the number of referrals.

(5) Changes in attitudes of students and teachers. Informal and anecdotal data will be obtained that may reflect attitudes of students and teachers in "experimental" classes. Where possible, actual comments of students and teachers will be obtained.

(6) Interest expressed by other teachers in the technique. It is anticipated that teachers who were not able to attend the workshops will evidence some interest in the techniques being used by the participating teachers. The record may amount to nothing more than the number of inquiries each teacher receives from other teachers.

[3] Mr. Frederic A. Rivkin.

(7) Extent of use by teachers of contingency management programs. As was noted previously, an effort will be made to increase the likelihood that teachers will attempt to employ specific contingency management programs in their classes in the coming year. All teachers who participated in the summer workshops will be contacted at scheduled intervals to ascertain exactly what program they are using or planning to use.

(8) Extent of use by teachers of objectives and learning modules. As above, teachers will be contacted periodically to determine the extent of their use of objectives and learning modules in instruction. Evidence in the form of written objectives and/or learning modules will be sought.

An early, informal report after the first few weeks of school this fall indicated that, in two of the four schools, all of the teachers who attended the workshops have instituted classroom management programs. Some programs reportedly have accomplished the desired behavior changes after only brief operation. For example, one teacher, with a child who cried many times during the day when the school year began, has reduced the instances to no more than once a day; this teacher is eager to begin a new program for other inappropriate behaviors.

Teachers who are not in the program have shown interest in program activities. A number have expressed a desire to participate in the program or at least to use the program procedures. School administrators are continuing their support of the program, especially in view of the interest expressed by teachers not in the program.

In the two schools in which all of the workshop teachers have not yet started classroom management programs, some of the teachers still have had some difficulty in writing program descriptions; further assistance is being provided to them.

LITERATURE CITED
AND
APPENDICES

LITERATURE CITED

1. McClelland, William A. *The Process of Effecting Change*, HumRRO Professional Paper 32-68, October 1968.
2. Smith, Robert G., Jr. *The Development of Training Objectives*, HumRRO Research Bulletin 11, June 1964.
3. Smith, Robert G., Jr. *The Design of Instructional Systems*, HumRRO Technical Report 66-18, November 1966.
4. Ammerman, Harry L. and Melching, William H. *The Derivation, Analysis, and Classification of Instructional Objectives*, HumRRO Technical Report 66-4, May 1966.
5. Whitmore, Paul G. "A Rational Analysis of the Process of Instruction," *IRE Trans. on Education*, December 1961.
6. Haggard, Donald F. *et al.*, *An Experimental Program of Instruction on the Management of Training*, HumRRO Technical Report 70-9, June 1970.
7. Ferster, C.B. "Classification of Behavioral Pathology," Chapter 2 in *Research in Behavior Modification*, L. Krasner and L.P. Ullman (Eds.) Holt, Rinehart, and Winston, 1965.
8. Skinner, B.F. *The Technology of Teaching*, Appleton-Century-Crofts, New York, 1968.
9. Hall, R. Vance, Panyan, Marion, Rabon, Deloris, and Broden, Marcia. "Instructing Beginning Teachers in Reinforcement Procedures Which Improve Classroom Control," *Journal of Applied Behavior Analysis*, 1968, 1, 315-322.
10. Madsen, Charles H., Jr., Becker, Wesley C., and Thomas, Don R. "Rules, Praise, and Ignoring: Elements of Elementary Classroom Control," *Journal of Applied Behavior Analysis*, 1968, 1, 139-150.
11. Schmidt, Gilbert W. and Ulrich, Roger E. "Effects of Group Contingent Events Upon Classroom Noise," *Journal of Applied Behavior Analysis*, 1969, 2, 171-179.
12. Thomas, Don R., Becker, Wesley C., and Armstrong, Marianne. "Production and Elimination of Disruptive Classroom Behavior by Systematically Varying Teacher's Behavior," *Journal of Applied Behavior Analysis*, 1968, 1, 35-45.
13. Cassileth, Barrie. *Review of Concepts and Literature on Contingency Management*, HumRRO Professional Paper 15-68, June 1968.
14. Cassileth, Barrie. *Reinforcement Management: An Approach to Motivating Army Trainees*, HumRRO Technical Report 69-17, November 1969.

Appendix A

WORKSHOP ON INSTRUCTIONAL OBJECTIVES

Date	Topic or Activity
June 22	Overview of the several workshops Review of concept of behavioral objective PE #1—Behavioral vs. non-behavioral Review and discussion PE #2—Characteristics of behavioral objectives Discussion
June 23	Objectives in context: Systems approach to instruction Terminal and enabling objectives Precision of structural components PE #3—Precision of components Discussion PE #4—Appropriateness of standards Discussion
June 24	Concept of dominant domain PE #5—Domains of objectives Discussion Preparation of objectives in cognitive domain PE #6—Write objectives on selected topic Discussion
June 25	Review and discussion of work in PE #6 Preparation of objectives in affective and psychomotor domains PE #7—Write objectives in affective and psychomotor domains Discussion Criterion test construction PE #8—Write test items for objectives prepared in PE's #6 and #7
June 26	Review and discussion of PE #8 Comparison of exit behaviors of a lower level class with required entry behaviors of next higher class PE #9—Preparing exit and entry statements Review and discussion
June 29, 30	Continue any exercise above not yet completed. Continue PE #6, using material customarily taught.

Appendix B

WORKSHOP ON LEARNING MODULES AND MASTERY TESTS

Date	Topic or Activity
July 1	Overview of workshop Definition, rationale, merit of approach PE #1—Rationale for modules Approach for constructing modules Procedures for dividing material PE #2—Divide material into modules Review and discussion
July 2	Preparing objectives for learning modules PE #3—Convert content into objectives Review and discussion Evaluation of modules in light of objectives Review and discussion Mastery test construction PE #4—Construction of test items Review and discussion
July 6	Continuation of previous exercise Review and discussion Plan of instruction for class PE #5—Preparation of lesson plan Review and discussion
July 7-17	Application of approach to course material taught in regular school year

Appendix C

WORKSHOP ON CONTINGENCY MANAGEMENT

Date	Topic or Activity
June 22	Conference: Rationales and Procedures for Contingency Management
	Causes of behavior
	Contingencies and their management
	Positive reinforcers and aversive stimuli
	Schedules of reinforcement
	Identifying and isolating specific behaviors
	General procedures:
	Positive reinforcement of appropriate behaviors and extinction of inappropriate behaviors
	Selecting initial reinforcers, shifting control to secondary reinforcers, and fading of reinforcement
	Positive reinforcement of appropriate behaviors and punishment of inappropriate behaviors
	Specific techniques:
	Techniques for controlling the teachers's behavior
	Self-cueing
	Cueing from an assistant
	Mechanical cueing
	Techniques for evaluating effects
	Data analysis—graphing
	Providing individualized reinforcers
	Developing a reinforcer menu
	Establishing a token economy
	Individual performance contracting
	Group contingencies
	Group contracting
	Games
	Providing response to opportunities
	Successive approximations
	Chaining
	Time out (from positive reinforcement)
June 23	Conference: Baseline techniques
	Procedures for describing teacher behavior in the classroom
	Contingencies established
	Positive reinforcements
	Negative reinforcements
	Punishments
	Application of established contingencies
	Application of non-established contingencies
	Application of inappropriate contingencies
	Provision for response opportunities

Date	Topic or Activity
	Procedures for describing student behavior in the classroom Non-attending behaviors Disruptive behaviors Mechanics for recording and analyzing data
	Practicum: Application of baseline techniques
June 24	Conference: Baseline techniques (continued) Presentation of previous day's practicum results Reliability of observations Review of behavioral definitions
	Practicum: Application of baseline techniques (continued)
June 25	Conference: Baseline techniques (continued) Presentation of previous day's practicum results Tentative identification of behavior problems in each class
	Practicum: Application of baseline techniques (continued)
June 26	Conference: Formulation of a contingency management prescription for each class Identification of behavior problems in each class (continued) Conduct of functional analyses Formulation of general procedures Selection of specific techniques
	Practicum: Application of baseline techniques (continued)
June 29	Conference: Formulation of a contingency management prescription for each class (continued) Preparation of materials required for application of selected techniques
	Practicum: Application of baseline techniques
June 30 - July 17	Conference: Review of contingency management procedures being applied in each class
	Practicum: Application of contingency management procedures prescribed for each class

Appendix D

WORKSHOP FOR ADMINISTRATIVE PERSONNEL

Date	Topic or Activity
June 17	Purpose of workshop Background and discussion of teacher workshops Review of concept of behavioral objective Rationale for objectives PE #1 from Objectives Workshop Discussion Structural components of objectives PE #2 from Objectives Workshop Discussion Types of objectives Evaluation of precision of components PE #3 from Objectives Workshop
June 18	Concept of domains in objectives Administrator's role in use of objectives Discussion Learning modules and mastery tests Approach to construction of modules Construction of mastery tests Discussion Contingency management techniques Sample procedures for deviant behaviors Procedures for motivating academic performance Role of administrator in contingency management Discussion Administration of special PE's Discussion

Appendix E

PUPIL PERFORMANCE OBJECTIVES

EXIT BEHAVIORS–KINDERGARTEN

1. When shown a series of colored cards, the pupil must be able to give correctly the names of each color (12 colors).
2. When asked to do so, the pupil must say correctly the names of the letters of the alphabet.
3. When shown cards with lower case letters, the pupil must correctly say the names of the letters.
4. When asked to do so, the pupil must be able to write his or her first name and last initial correctly.
5. When asked to do so, the pupil must be able to give his address and phone number correctly.
6. When asked to do so, the pupil must be able to distinguish opposites.
7. When asked to do so, the pupil must be able to distinguish between left and right.
8. When asked to do so, the pupil must be able to correctly say in consecutive order the numbers from 1 - 10.
9. When asked to do so, the pupil must be able to correctly write the numbers from 1 - 10 in consecutive order.
10. Given the numbers 1 - 10 written on the chalkboard and when the teacher asks for a given number, the pupil must be able to correctly identify or pick out that number.
11. When shown several different coins (penny, nickel, dime, etc.) and when asked by the teacher, the pupil will identify the money value of each. The pupil must be able to identify which coins are bigger and which are smaller (comparatives).

READING–GRADE 1

AUDITORY PERCEPTION

A. Reading Readiness

1. Given a selection of common everyday sounds, the pupil must listen to a particular sound and tell the name of the object making the sound.
   EXAMPLE: Siren and fire engine
2. After listening to a group of common nursery rhymes, the pupil must be able to identify rhyming words by saying them as partners.
   EXAMPLE: Jill and hill

3. Given a selection of (5) vocabulary words (in pictures and/or spoken by the teacher), the pupil must identify the initial consonant sounds (t, b, s, m, and f) by reproducing the initial sound of the words (Tom, Betty, Susan, mother, and father).

B. Pre-Primer

1. Given a selection of pictured or spoken words from the 56-word sight-vocabulary words, the pupil must be able to identify the words beginning with b, s, t, f, m, hard c, and w by saying the sound of the initial letter of each word.

2. Given selected pictured or spoken words from the sight vocabulary words, the pupil must be able to correctly write the letter for the initial sound heard using the following letters: r, h, g, p, l, and d.
Other activities may include:

   a. Pointing to letters
   b. Picking up a letter
   c. Matching

MATHEMATICS–GRADE 1

The pupil must be able to do the following correctly:

1. Compare sets by one-to-one matching.
2. Identify equivalent sets.
3. Give the cardinal number for each set (0-9).
4. Identify, write, and say the numerals from 0 to 9.
5. Demonstrate ordinal numbers: first through tenth.
6. Count the number of elements in a set.
7. Write the cardinal number for a set.
8. Arrange a set of numerals in sequential order.
9. Group items into sets of 10, with more than one set in a collection.
10. Given a 2-place numeral, the pupil can indicate the ten's (10's) and one's (1's) place.
11. Skip-count by 2's, 5's, and 10's.
12. Count to 100 by one's (1's).
13. Write to 100 by one's (1's).
14. Compare inequalities using the signs $>$ and $<$.
15. Solve addition equations using the horizontal and vertical forms with sums to 10 or less.
16. Solve subtraction equations in both the horizontal and vertical forms with subtrahends of 10 or less.
17. Given an inverse example for any addition fact.

READING–DESIRED ENTRANCE BEHAVIORS–GRADE 2

1. Given a list of words, the pupil must be able to correctly identify and write initial consonant sounds as given in first grade material (18). Accuracy will depend on reading level of the child.
2. Given a list of words, the pupil must be able to correctly identify and write final consonant sounds as given in first grade material (7). Accuracy will depend on the reading level of the child.
3. Given a list of words, the pupil must correctly circle long vowels.
4. Given a list of words, the pupil must correctly make a minimum of two rhyming words for each.
5. Given a set of pictures, the pupil must correctly identify pictures with long vowels.
6. The pupil must recognize the basic sight vocabulary for the appropriate reading level.
7. The pupil must be able to name and write letters of the alphabet with no errors.
8. The pupil must be able to match the capital with the small letter with no errors.
9. Given a basic sight word, the pupil must be able to make new words by adding suffixes according to appropriate reading level.
10. The pupil must be able to recognize words that show possession.
11. Given a word, the pupil must be able to orally give an opposite.

READING OBJECTIVES–GRADE 2

AUDITORY PERCEPTION

1. Given two words, the pupil must be able to tell if they are alike initially, medially, finally.
2. Given two words, the pupil must be able to tell if they rhyme.
3. Given a word, the pupil must be able to tell if it is a long or short vowel sound.

VISUAL DISCRIMINATION

4. The pupil must be able to recognize the basic sight vocabulary of the first and second grade Ginn readers.
5. Given a list of words, the pupil will be able to differentiate between similar words.
6. Given a list of words, the pupil will be able to differentiate between words alike in form and words with double medial letters.

PHONETIC ANALYSIS

7. Given a list of words, the pupil will be able to recognize two- and three-letter blends.
8. Given a list of words. the pupil will be able to recognize diagraphs.

9. Given a list of words, the pupil will be able to identify and write final consonant sounds as given in the second grade material. Accuracy will depend on the reading level of the child.
10. Given a list of words, the pupil will be able to recognize variant sounds of c and g.

MATHEMATICS–DESIRED ENTRANCE BEHAVIORS–GRADE 2

1. The pupil must be able to count to 100 orally.
2. The pupil must be able to write numerals to ten.
3. The pupil must be able to add two one-digit numbers with sums to ten.
4. The pupil must be able to subtract two one-digit numbers with subtrahend to ten.
5. The pupil must be able to compare numbers to 100, using appropriate symbols (=, <, >).
6. The pupil must be able to give place value for two-digit numbers.
7. The pupil must be able to supply the missing addend in a given equation.
8. The pupil must be able to measure with a ruler, to the nearest inch.
9. Given a candy bar, the pupil will demand half.
10. The pupil must be able to tell time on the hour and half-hour.
11. The pupil must be able to count to 100 by 5's and 10's.
12. The pupil must be able to solve a set of problems using the commutative principle of addition. (3+2=2+3)
13. The pupil must be able to use, orally, ordinal numbers to 10.
14. Given a set of addition problems, the pupil must be able to apply the inverse principle to each addition fact.

MATHEMATICS–GRADE 2

1. The pupil must be able to add two one-digit numbers with sums to 18.
2. The pupil must be able to subtract two one-digit numbers with a subtrahend no greater than 18.
3. The pupil must be able to add two two-digit numbers with and without carrying.
4. The pupil must be able to subtract two two-digit numbers with and without borrowing.
5. The pupil must be able to give place value for three- and four-digit numbers.
6. The pupil must be able to add two-, three-, and four-digit numbers without carrying.
7. The pupil must be able to subtract two-, three-, and four-digit numbers without borrowing.
8. Given a number, the pupil must be able to tell if it is odd or even.
9. Given a number, the pupil must be able to give the next highest number.

10. Upon request, the pupil must be able to tell time.
11. The pupil must be able to skip count by any given number.
12. The pupil must know the numerical value of U.S. coins and how to make change.
13. Given an object or geometric shape, the pupil must be able to divide it into halves, thirds, fourths, fifths, and label the parts.
14. The pupil must be able to write any number up to four digits in expanded notation.

READING–GRADE 3

AUDITORY PERCEPTION

1. Given a list of words, the pupil must be able to correctly identify the blends (hard and soft "c" and "g") and say these sounds. The pupil must also use these sounds to attack words independently.
2. Given a list of words, the pupil must be able to correctly identify the initial, medial, and final consonants, and digraphs, and say these sounds. The pupil must also be able to use these sounds to form new words.
3. Given a list of words, the pupil must be able to correctly identify the syllabic parts of words by saying the vowel sounds and variant vowel sounds. The pupil must also divide the word into syllables and tell the number of syllables in each word given.
4. Given a list of words, the pupil must be able to correctly place diacritical marks (macron, breve, or circumflex).

READING COMPREHENSION–GRADE 3

I. CRITICAL READING

Given a story in the Ginn Reader appropriate to the child's reading level, the student must be able to read the story critically. To demonstrate his ability to read critically he must perform the following:

(a) Distinguish fact from fantasy.

(b) Predict the probable outcome of situations.

(c) Develop particular facts from a statement, and given a whole statement, form particular facts.

(d) Make logical assumptions in predicting story endings.

(e) Compare characters and events in the story (likenesses and differences).

II. MAIN IDEA

Given a story or paragraph in the Ginn Reader appropriate to the child's reading level, the student must identify the main ideas by relating, writing, or underlining:

(a) The topic sentence.

(b) Titles and subtitles reflecting the main idea.

III. SEQUENCE

Given a group of sentences, paragraphs, or pictures appropriate to the student's reading level, the pupil must be able to sequence the events by:

(a) Arranging the events in correct order.

(b) Retelling, dramatizing, or writing the events in the correct sequence.

MATHEMATICS–GRADE 3

1. Given a number of 12 or fewer digits, the student must state the place value of each digit correctly.
2. Given two numbers up to four digits, the student must write the correct symbol (equality or inequality) to show which is greater or less.
3. Given a set of three-, four-, or five-digit addition problems, the student will add them. If a column exceeds nine, the child will carry to the next column.
4. Given a five- or six-digit number, the student must write them in expanded form. (406= 400 + 6)
5. Given a set of seven-digit problems (or less), the child must order, rearrange, or group them to write the sum.
6. Given a set of four one-, two-, or three-digit numbers, the student must add and carry to get the sum.
7. Given a set of subtraction problems with one-, two-, three-, or four-digit numbers, the student must borrow from the next place column in order to get the difference.
8. Given a set of single-digit multiplication problems, the child must give the answer from memory.
9. Given a set of multiplication problems with one, two, or three digits and one- or two-digit multipliers, the child must multiply and carry to solve and arrive at the product.
10. Given a set of division problems with two- or three-digit dividends, and one-digit divisors, the child will solve for the quotient and one-digit remainders.

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